

Currency Crises

1. Generation One

2. Generation Two

3. Sudden Stops

4. Banking Crises

5. Fiscal Solvency

1 Generation One

1.1 Monetary and Fiscal Policy

- Initial position
 - long-run equilibrium
 - purchasing power parity

$$P = EP^* = E$$

- interest rate parity

$$R = R^* + \frac{E^e - E}{E}$$

- current account balance
- balanced government budget
- flexible exchange rates

- Policy change
 - permanent increase in government spending
 - financed with money growth
 - long-run equilibrium with
 - * current account deficit
 - * government budget deficit
 - * higher relative price of domestic goods (lower q)
 - * inflation = exchange rate depreciation

- Decide to fix the exchange rate to end depreciation and inflation
 - reserve loss finances government spending instead of money growth
 - policy must end because can't lose reserves forever

1.2 Assumptions about Policy as Crisis Approaches

- Government will continue policy as long as it has reserves
- Once reserves are exhausted, it will return to financing the government deficit with money

1.3 Post-crisis Equilibrium

- Higher money growth finances government budget deficit
- Monetary neutrality implies that exchange rate depreciates continually and that inflation is higher

$$\frac{E^e - E}{E} = \pi^e$$

- Money demand

$$\frac{M}{P} = \frac{M}{E} = L(Y, R^* + \pi^e)$$

- Before crisis $\pi^e = 0$
- After crisis $\pi^e > 0$
- Therefore, money demand falls on crisis date
- Will E rise or
- Will M fall?

1.4 Shadow Floating Exchange Rate

- Definition - value for exchange rate at time t if reserves (F_t) were all exchanged for money at time t
- On crisis date, all remaining reserves will be exchanged for money
- Value of money if all reserves exchanged for money

$$M - F_t$$

- Money market equilibrium with lower money

$$\frac{M - F_t}{E_t^s} = L(Y, R^* + \pi^e)$$

- Shadow floating exchange rate yields money market equilibrium if all reserves were exchanged for money

$$E_t^s = \frac{M - F_t}{L(Y, R^* + \pi^e)}$$

- Since F_t falls over time E_t^s rises over time

1.5 Timing of Speculative Attack

- Will speculators buy foreign exchange reserves if $E_t^s < \bar{E}$?
 - After attack, $E_t = E_t^s < \bar{E}$
 - Capital loss on reserves
- Will speculators buy foreign exchange reserves if $E_t^s > \bar{E}$?
 - capital gain on reserves
- Speculators will attack when $E_t^s = \bar{E}$

- Money market equilibrium

$$\bar{E} = \frac{M - F_t^*}{L(Y, R^* + \pi^e)}$$

- Once reserves reach $F_t^* > 0$, a speculative attack eliminates them

$$F_t^* = M - \bar{E}L(Y, R^* + \pi^e)$$

1.6 Post-crisis equilibrium and lessons

- Money growth higher than initially because government has lost interest revenues from reserves
- Cannot reduce inflation permanently without fiscal reform
 - must either reduce spending or raise taxes to pay for it
 - money growth under flexible exchange rates causes inflation
 - reserve loss under fixed exchange rates causes a currency crisis
- Policy which uses fixed exchange rates to reduce inflation without fiscal reform is doomed to failure

1.7 Crisis Predictability

- Crisis date is perfectly predictable since no uncertainty
 - If higher government spending were stochastic, then date becomes uncertain
 - As reserves get low, there is some chance that there will not be enough reserves to keep M from rising
 - E_{t+1}^s could be greater than \bar{E}
 - Therefore, expect devaluation, and interest rates rise

- Warning signals of a crisis
 - government budget deficit
 - current account deficit (twin deficits)
 - real exchange rate appreciation (q lower)
 - falling foreign exchange reserves
 - rising interest rates

2 Generation Two

2.1 Crises in 1990's: no government deficits or declining reserves

2.2 Cost of abandoning the fixed exchange rate

- Government always has the incentive in a recession to devalue and stimulate the economy
- Assume that abandoning the exchange rate entails a fixed cost

- Lose international reputation for commitment
- Actual costs of policy change

2.3 Crisis is the government's optimal response to an increase in E^e

- When E^e increases, maintaining the fixed exchange rate requires R up
- In the extended model, this implies that output falls
- If the country already has a recession, the optimal governmental response might be to allow the exchange rate to depreciate, validating the increase in E^e
 - Compare cost of recession with E^e up and exchange rate fixed
 - To cost of devaluing to eliminate the recession

2.4 Why would E^e increase?

- Shock which reduces demand for domestic goods
- If maintain exchange rate, economy enters a recession
- Government has an incentive to devalue to avoid the recession
- Agents know the government has an incentive to devalue in a recession, implying E^e increases in a recession

2.5 Multiple Equilibrium

- With E^e unchanged, cost of recession could be less than costs of devaluation
- However with E^e up, the recession is worse, making the costs of recession larger
- One equilibrium with E^e unchanged, a small recession, and a fixed exchange rate
- Another equilibrium with E^e up, a flexible exchange rate, and perhaps no recession

2.6 Crisis Predictability

- Country in a recession
- Overvalued real exchange rate
 - Correct by raising E
 - Or by waiting for P to fall in recession
- No need for CA deficit or budget deficit

3 Banking Crises

3.1 Twin crises: Exchange rate and banking

3.2 Nature of problem

- Banks accept foreign-currency deposits
- In the event of a bank run on foreign-currency deposits, central bank uses reserves to act as a lender of last resort and reserves fall

3.3 Generation One Model

- If banking crisis eliminates reserves, fixed exchange rate system fails

3.4 Generation Two Model

- Bank runs usually occur in recessions
- If E^e increases government could choose to devalue

3.5 Crisis Predictability

- Weak banks
- Recession to generate the bank run
- Falling reserves as government lends them to banks

4 Sudden Stops

4.1 Asian crises seemed to be triggered by a sudden stop of capital flows

4.2 Nature of problem

- Country has a current account deficit and is borrowing to finance it
- Agents become concerned that the country (public and/or private) cannot repay and stop lending

- View lending stop as risk premium large enough to equate domestic saving and investment
- Shifts DD left in extended model enough to eliminate CA deficit (depends on how AA shifts)

4.3 Government decision about exchange rate

- Under fixed exchange rates, AA also shifts left such that DD, AA, and XX intersect at lower output
 - Country has recession
 - Current account deficit eliminated
- Under flexible exchange rates, AA can shift right, and equilibrium occurs at intersection of DD, AA, and XX
 - Recession is much smaller if it even exists
 - Current account deficit eliminated

4.4 Crisis Predictability

- Domestic financial difficulties, either private or public – predictable
- Financial crises with capital losses in other countries, forcing creditors to liquidate loans – not predictable
- Contagion – sudden stop and devaluation in one country often followed by sudden stop somewhere else
- Exchange rate crisis can be preceded or followed by default on debt

5 Fiscal Solvency - Why do creditors stop lending

5.1 Assumptions

- Purchasing power parity

$$P = EP^* = E$$

- Government intertemporal budget balance

$$\frac{B_{-1}}{P_0} = \frac{B_{-1}}{E_0} = \text{Present Value of } (G - T - \text{seigniorage})$$

- Government which wants to fix the exchange rate must fix the present value of future surpluses, allowing the monetary authority to fix the exchange rate
- Fiscal Theory of the Price Level – If the present-value of future surpluses falls, the exchange rate must rise, reducing the real value of outstanding debt to restore fiscal solvency

5.2 Generation One Models

- Reduce current money growth, raising future money growth to satisfy intertemporal budget constraint at fixed exchange rate
- Once future arrives, must drop fixed exchange rate to allow money to grow

5.3 Generation Two Models

- In a recession, automatic stabilizers raise taxes and reduce government spending, reducing the current budget surplus
- Agents might not believe future surpluses can be raised to offset the current reductions
- Increase in R necessary when E^e increases, reduces the present value of future surpluses unless agents believe actual surpluses will be increased to offset
- If present-value of surpluses falls, E must rise

- Government decision, only in that it chooses not to keep the present-value of surpluses constant in a recession

5.4 Banking Crises

- Increase in expected future expenditures to stabilize banking system
- Expected present value of surpluses falls

5.5 Sudden Stops

- What caused the sudden stop?
- Decrease in the expected present-value of surpluses
- Agents refuse to lend at the current exchange rate because real debt is less than expected surpluses to repay
 - Government has recently been running large deficits
 - Something happens to make agents think governments will run future large deficits (banking crisis)

- Something happens to agents' confidence that government can continue current sound policy (political problems, war, etc.)
- Default and devaluation both restore fiscal solvency